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# Analyzing demographic features of medical abortion applicants in legal medical department of Tehran province between 2020 and 2021

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**Abstract**--Introduction: We are permitted to terminate the pregnancy for therapeutic reasons or when it is medically necessary for these situations. Sometimes fetal, other times maternal, for these reasons. This indicates that we sometimes do abortions to protect the mother's health, and other times we do so because of defects in the fetus. This study was done to look at the demographics of people who applied for medical abortions in Tehran province's legal medical department between 2020 and 2021. Method: The current study was descriptive-cross-sectional-retrospective, and the legal medical department of Tehran Province's abortion applicants' files between 2020 and 2021 were inspected. The data collecting form from the legal medical office's prepared files and comparing fetal malformations and maternal conditions leading to abortion served as the study instrument. The data was statistically analyzed after being entered into the statistical program SPSS version 24. Finally, requests' outcomes and abortion instances involving maternal and fetal illnesses were analyzed. Findings: The findings showed that the most typical fetal age was between 16 and 19 weeks, the most typical maternal age was between

31 and 45 years old, and 50.8% of women had filed for a license in 1400. Fetal abnormalities were the main justification for getting abortion permission (85.7%). The most significant prenatal ailment was Down syndrome, while the most significant maternal illness was heart disease. The study's findings revealed that the request's origin, fetal abnormalities, and the mother's illness all impacted the licensing request's outcome ( $P$ -value $<0.05$ ). The year of referral, the age of the fetus, and the mother's age all significantly affected the reason for the medical abortion request ( $P$ -value $<0.05$ ). Based on the year of referral, fetal age, and maternal age, there were also statistically significant differences in fetal abnormalities ( $P<0.05$ ). However, only the fetus's age significantly impacted maternal illnesses ( $P$ -value  $<0.05$ ). Conclusion: According to the study's findings, there has been an increase in the number of referrals for license applications for abortion therapy. This increase can be attributed to the development of diagnostic and paraclinical tools like ultrasound as well as strategies for educating the public about the fundamentals of abortion therapy.

**Keywords**---*medical abortion, fetal abnormality, maternal disease.*

## **Introduction**

Abortion has recently gained a lot of attention, and there has frequently been debate regarding its legality and accessibility (Sedgh et al., 2011). Contraception is typically used as a method of avoiding unintended pregnancies, especially in nations where the topic of abortion is not contentious (Faundes & Shah, 2015).

Accurate data on abortion rates and trends can aid in developing policies and programs to address the unmet need for effective contraceptive services. Policymakers and program planners can use this information to assess the rates of fetal and neonatal abnormalities and unintended pregnancies (Beckwith, 2007). Accurate abortion measurements can also influence public debate by offering objective, factual proof of the occurrence of abortion. Abortion rates have decreased in many regions of the world since the previous study of abortion rates in nations where abortion is commonly allowed (Johnson et al., 2013). Although the number of reported abortions in nations with low goal fertility may initially rise as a result of abortion legalization, abortion rates will gradually fall as more people have access to family planning information and contraceptive services (Velez, 2012).

Abortion treatment refers to ending a pregnancy before the fetus is viable, either to save the mother's life or because of fetal illnesses. Although it should be mentioned that in the actual world, it does not matter if the abortion saves the mother's life, the treatment team's aim and use of all of their knowledge are required in this direction (Cook et al., 2006).

Abortion is not utilized as a kind of treatment; hence abortion therapy is not considered a treatment in the traditional sense. In other words, the

forementioned phrase is not regarded in law or medicine as a form of treatment and cannot heal someone. If the fetus is deformed or retarded, it is either prevented from being born, or a threat to the mother's life is removed. Because of this, the phrase "therapeutic abortion" is used in opposition to the word "illegal abortion," and the term "medical abortion" should be used in its place (Boland & Katzive, 2008).

Infertility, spontaneous abortion, and intentional abortion are all frequent medical occurrences in the world (Direkvand-Moghadam et al., 2014). According to a World Health Organization assessment, 19–20 million abortions are carried out annually throughout the globe by untrained, unskilled individuals working in settings with subpar medical standards. However, more than half (55%) of unsafe abortions (which account for 15% of all abortions) have a place in Asian nations.

In a thorough analysis, it was estimated that 58 out of every 1000 women worldwide had abortions (Dastgiri et al., 2014). Abortion with the intent to kill is a widespread procedure, with over 56 million both safe and unsafe abortions carried out globally between 2010 and 2014. (Ganatra et al., 2014). Although abortion is currently regarded as a safe procedure, it can increase the chance of developing several health ailments, such as blood pressure and metabolic disorders (Yang et al., 2018), (Xu et al., 2013). Unsafe abortions result in 68,000 fatalities and millions of complications each year in female patients. In Pakistan, 890,000 abortions are carried out every year (Ilyas et al., 2009). The research samples in Turkey had a history of having at least one induced abortion (Maral et al., 2007).

Although there are no reliable data on abortions in Iran, statistical analyses and numerous research have shown that there are roughly 80,000 abortions each year (Grimes et al., 2006). They calculated the yearly rate of abortion in Iran to be 73,000 in research utilizing the residual indirect technique and data from the National Population and Health Survey, which was carried out in Iran in 1379. (Erfani & McQuillan, 2008).

Between 1990–1994 and 2010–2014, there was a decline in the global abortion rate, but it was only marginal (falling from 40 to 35 abortions per 1,000 women) (Singh et al., 2018). According to those research, heart illness is the most prevalent maternal cause for seeking an abortion, while beta thalassemia is the most prevalent fetal reason (Qadi Pasha and Aminian, 2016). Currently, the rules in this area vary between nations. Abortion was made legal in Iran in 1982 to preserve the mother's life before her soul was destroyed. A significant adjustment was made in our nation's approach to therapeutic abortion situations when the Islamic Council approved the rule on the procedure in 2014. Abortion is now legal in situations when the woman's life is in danger, a serious fetal defect is certain and will interfere with her ability to have a child, or it would shame the mother. After the law was approved, the Forensic Medicine Organization served as the approving body for cases involving abortion treatment. 51 Fetal and maternal disorders, such as hydrops fetalis and conditions that result in the death of the fetus after birth, such as anencephaly and meningoencephaly, as well as the mother's life-threatening illnesses, such as the active stage of HIV infection, kidney failure, heart failure, treatment-resistant epilepsy, uncontrolled active 1

(Larigani & Zahedi, 2006). Field studies reveal that despite the removal of legal limits and the clarity of medical indicators, considerable instances of improper patient referrals or delays in diagnosis pose major legal and medical issues for patients, medical professionals, and forensic doctors. Finally, it will result in higher medical expenses or unregulated abortions. Even in certain instances, supplementary medicine medications that pose hazards and difficulties for mothers are utilized (Mahmoudi et al., 2015).

Therefore, taking into account the numerous referrals for abortion to forensic medicine and the involvement of several specialists in this subject, we chose to analyze the frequency of all sorts of grounds for the request and cases of its approval and denial in Tehran in 2013–2021.

## **Method**

The Forensic Medical Department of Tehran Province conducted this descriptive, cross-sectional, and retrospective investigation over two calendar years (2018–2019). All of the applicants for medical abortion at the legal medical office of Tehran Province between the years of 2019 and 2014 made up the statistical population of this study. They were chosen by the census, and all members of society were treated as samples. Cases with insufficient information are excluded. The relevant checklist was filled out with the necessary data on demographics (year of referral, age of mother and fetus, country), clinical information (fetal abnormalities, maternal illness, application outcome), and other factors from the files.

The acquired data were then examined and contrasted using the statistical program SPSS version 24. The appropriate tests, such as chi-square and Kolmogorov-Smirnov, were performed, and a threshold of significance of  $P < 0.05$  was regarded as being reached. Excel and Word were used to create the tables and graphs. Finally, the results were compared to those of other studies in the field, and recommendations were made in light of the findings.

## **Findings**

The mean gestational week in this study's findings was 16.6 weeks, while the most common fetal age ranged from 16 to 19 weeks. Mothers were mostly between the ages of 31 and 45, with a 43.6 mean age. According to the findings, 49.2% of mothers in 2019 and 50.8 percent in 2014 had applied for a license. The findings of this study indicated that fetal anomalies accounted for 85.7% of the requests for abortion licenses and maternal diseases and disorders accounted for 14.3%. According to the results, severe cardiac abnormalities (10.9%) and Down syndrome (21.1%) were the two most common fetal disorders cited as justifications for seeking an abortion license. The main justifications for requesting an abortion, per the study's findings, were the mother's heart problems. The findings of this investigation indicated that 65.4 percent had gotten abortion permission.

Table 1. The result of applying for a medical abortion license based on demographic features

	Indices	Non-confirmed (%)n	Abortion confirmed (%)n	Total (%)n	P-value
<b>reference year</b>	2020	(51,1) 607	(48,3)1086	(49,2)1693	0.062
	2021	(48,9)581	(51,7)1164	(50,8)1745	
<b>fetal age</b>	Less than five weeks	(1,3)16	(3,2)71	(2,5)87	0.01
	6-10 weeks	(12,6)150	(2,5)57	(6,0)207	
	11-15 weeks	(23,3)277	(29,1)655	(27,1)932	
	16-19 weeks	(40,5)481	(64,8)1459	(56,4)1940	
	More than 19 weeks	(12,3)146	(0,0)0	(4,2)146	
سال مراجعه	unknown	(9,9)118	(0,4)8	(3,7)126	0.062
<b>Mother's age</b>	Less than 15 years	(0,2)2	(0,3)6	(0,2)8	0.765
	16-30 years	(36,3)431	(35,1)789	(35,5)1220	
	31-45 years	(62)737	(63,4)1426	(62,9)2163	
	More than 45 years	(0,9)11	(0,9)21	(0,9)32	
	سال مراجعه	unknown	(0,6)7	(0,4)8	
<b>Mother's nationality</b>	Iranian	(93,5)1111	(96)2160	(95,1)3271	0.01
	Afghani	(6,4)76	(4)86	(4,8)165	
	Syrian	(0,1)1	(0,1)1	(0,1)2	

According to the findings of the chi-square test, the age of the fetus in the participants of the study significantly affected the outcome of applying for medical abortion authorization ( $P$ -value $<0.05$ ). The age of 16 to 19 weeks was associated with non-confirmation cases most frequently, accounting for 481 instances. With 1459 confirmed cases, the age of 16 to 19 weeks was associated with the highest number of cases. Additionally, the mother's country had a substantial impact on the outcome of the medical abortion license application ( $P$ -value $<0.05$ ). In situations of non-confirmation, Iranian mothers accounted for the greatest frequency with 1111 cases, while in cases of confirmation, Iranian mothers accounted for the highest frequency with 2160 cases.

However, the chi-square test revealed that there was no significant difference in the outcomes of applications for medical abortion licenses depending on the mother's age and the year of referral among the participants of the study (Table 1).

Table 2. The result of applying for a medical abortion license based on clinical features

	<b>Indices</b>	<b>Non-confirmed (%)n</b>	<b>Abortion confirmed (%)n</b>	<b>Total (%)n</b>	<b>P-Value</b>
Reasons for request	Maternal fetal	(34,2)406 (65,8)782	(5,3)120 (94,7)2130	(15,3)526 2912(84,7)	0.01
Fetal anomalies	emphalocele	(2,2)17	(4,8) 103	(4,1)120	0.01
	Encephalocele	(2)16	(3)64	(2,7)80	
	thalassemia major	(0,1)1	(3,4)72	(2,5)73	
	meningocele	(1)8	(0,9)19	(0,9)27	
	Hydrops fetalis	(8,4)66	(6,2)132	(6,8)198	
	Holoprosencephaly	(1,3)10	(3)64	(2,5)74	
	Phenylketonuria	(0,1)1	(0,6)13	(0,5)14	
	anencephaly	(1)8	(1,2)25	(1,1)33	
	exencephaly	(0,6)5	(3,4)72	(2,6)77	
	Severe cardiac abnormality	(12,9)101	(10,2)217	(10,9)318	
	hydrocephalus	(4,3)34	(3,4)73	(3,7)107	
	Cerebellar vermis hypoplasia	(2)16	(0,7)15	(1,1)31	
	Brain abnormalities	(3,5)27	(4,2)89	(4)116	
	Diaphragmatic hernia	(2,4)16	(1,8)39	(2)58	
	Ventriculomegaly	(2)16	(0,3)6	(0,8)22	
	Kidney abnormality	(2,4)19	(0,7)14	(1,1)33	
	Urethral obstruction	(1)8	(0,7)15	(0,8)23	
	Genetic disorder	(1,2)9	(1,4)29	(1,3)38	
	Chromosomal disorder	(8,8)69	(1,4)29	(3,4)98	
	Metabolic disorder	(0,8)6	(0,3)7	(0,4)13	
	Multiple bone dysplasia	(9,5)74	(9,2)197	(9,3)271	
	Oligohydramnios	(8,1)63	(2,9)61	(4,3)124	
	Arnold Chiari	(0,6)5	(1,5)33	(1,3)38	
	Down syndrome	(4,9)38	(27)256	(21,1)614	
	Turner syndrome	(1,8)14	(0)0	(0,5)14	
	Patau syndrome	(0,1)1	(1,5)33	(1,2)34	
	Dandy-Walker syndrome	(0,5)4	(1,6)35	(1,3)39	
	Edward's syndrome	(0,8)6	(4,2)89	(3,3)95	
	Positive screening test	(8,6)67	(0)0	(2,3)67	
	Conjoined twins	(0,1)1	(0,4)9	(0,3)10	

	IUFD	(2,7)21	0(0)	(0,7)21	
	IUGR	(1,7)13	0(0)	(0,4)13	
	haemophilia	(0,2)1	(7,5)9	(1,9)10	
	High NT	(6,2)25	0(0)	(4,8)25	
	Unspecified abnormality	(2,4)19	0(0)	(0,7)19	
Maternal disease	Heart disease	(15)61	(54,2)65	(24)126	0.01
	Mental illness	(7,4)30	(2,5)3	(6,3)33	
	Lung disease	(4,2)17	(5,8)7	(4,6)24	
	liver disease	(5,7)23	(7,5)9	(6,1)32	
	Kidney Disease	(4,2)17	(9,2)11	(5,3)28	
	Twin pregnancy	(3)12	0(0)	(2,3)12	
	History of uterine adhesions	(4,7)19	(0,8)1	(3,8)20	
	History of receiving radiation	(4,4)18	0(0)	(3,4)18	
	History of surgery	(2,2)9	0(0)	(1,7)9	
	Cancer	(7,4)30	(6,7)8	(7,2)38	
	brain disease	(2)8	(5)6	(2,7)14	
	taking medication	(29,1)118	0(0)	(22,4)118	
Mother with MS	(4,4)18	(0,8)1	(3,6)19		

The following findings were attained in the analysis of the variation in the outcome of the application for a medical abortion license depending on the clinical characteristics:

The difference in the outcome of applying for a medical abortion license depending on the justification for the application in the analyzed participants was significant (P-value<0.05), according to the chi-square test findings. The most frequent cause of non-confirmation, accounting for 782 instances, was the fetal abnormality. With 2130 instances, fetal abnormality had the greatest prevalence among confirmed cases. Additionally, there was a significant difference in the outcome of seeking a medical abortion authorization depending on fetal abnormalities (P-value<0.05). As a result, the highest frequency in instances of non-confirmation was associated with serious cardiac abnormalities in 101 cases, while in cases of confirmation, the highest frequency was related to Down syndrome in 576 cases. Furthermore, there was a significant difference in the outcome of the application for a medical abortion authorization depending on the mother's illness (P-value<0.05). Therefore, drug use was associated with the highest frequency in cases of non-confirmation (118 cases), and heart disease was associated with the highest frequency in cases of confirmation (65 cases) (Table 2).

Table 3. Frequency distribution of the reason for applying for a medical abortion license based on demographic features

	<b>Indices</b>	<b>Maternal reason (%n)</b>	<b>Fetal reason (%n)</b>	<b>Total (%n)</b>	<b>P-value</b>
<b>Year of reference</b>	2020	(55,1)290	(48,2)1403	(49,2)1693	0.01
	2021	(44,9)236	(51,8)1509	(50,8)1745	
<b>Fetal age</b>	Less than five weeks	(1,5)8	(2,7)79	(2,5)87	0.01
	6-10 weeks	(35)148	(0,8)23	(6)207	
	11-15 weeks	(22,2)117	(28)815	(27,1)932	
	16-19 weeks	(11,2)59	(64,6)1881	(56,4)1940	
	More than 19 weeks	(9,9)52	(3,2)94	(4,2)146	
Unknown	(20,2)106	(0,7)20	(3,7)126		
<b>Mother's age</b>	Less than 15 years	(0,2)1	(0,2)7	(0,2)8	0.03
	16-30 years	(31)163	(36,3)1057	(35,5)1220	
	31-45 years	(66,3)349	(62,3)1814	(62,9)2163	
	More than 45 years	(1,7)9	(0,8)23	(0,9)32	
	unknown	(0,8)4	(0,4)11	(0,4)15	
<b>Mother's nationality</b>	Iranian	(95,8)504	(95,0)2767	(95,1)3271	0.255
	Afghani	(4)21	(4,9)144	(4,8)165	
	Syrian	(0,2)1	(0,1)1	(0,1)2	

These findings were reached based on the demographic traits in the analysis of the variation in the cause of getting medical abortion permission.

The difference in the study participants' reasons for applying for a medical abortion license depending on the year of referral was significant ( $P$ -value $<0.05$ ), according to the findings of the chi-square test. As a result, the year 1400 had the highest frequency of cases involving maternal causes (236 instances), while the year 1400 had the highest frequency of cases involving fetal causes (1509 cases). Moreover, the difference in the justification for requesting a medical abortion authorization based on the fetus's age was significant ( $P$ -value $<0.05$ ). Thus, the age of 6 to 10 weeks was associated with the highest frequency of maternal-cause cases (184 instances), whereas the age of 16 to 19 weeks was associated with the highest frequency of fetal-cause cases (1814 cases). Besides that, there was a significant difference in applicants' reasons for requesting a medical abortion license based on the mother's age ( $P$ -value $<0.05$ ). Thus, the highest frequency of maternal causes occurred in 349 cases involving people between the ages of 31 and 45, and the highest frequency of fetal causes occurred in 1881 cases involving people between the ages of 31 and 45. The chi-square test found that in the participants under study, there was no difference in the justification for asking for medical abortion permission depending on the mother's country (Table 3).

## Results and discussion

The average gestational week in this study's findings was 16.6 weeks, while the most common fetal age ranged from 16 to 19 weeks. The findings of the Yari Nasab and Amini (2017) study also revealed that the majority of referrals (28.5%) occurred when the fetus was 18 weeks old. The maximum fetal age in the study by Suleimanpour et al. ranged from 15 to 19 weeks. The greatest fetal age in Qadi Pasha's (2004) research was 17 weeks. In this context, it is necessary for the medical staff decreases the number of cases that occur after the prescribed time by increasing the awareness of pregnant mothers about the maximum time for issuing a legal abortion permit in forensic medicine, emphasizing the timely implementation of the screening program and diagnostic measures, their timely referral to the forensic organization due to the possibility that these women could seek illegal abortions, which could create further issues and concerns.

Mothers were mostly between the ages of 31 and 45, with a 43.6 mean age. According to Yari Nasab and Amini's study from 2017, 28.5% of mothers were between the ages of 30-35. In the study by Seyyed al-Shohdai, the maximum frequency is observed in the age group of 30-35 years old mothers. The minimum and maximum ages of mothers who were referred for a medical abortion permit in Aqabayan's research from 2018 were 14 and 48 years, respectively. The mothers in Rostam Nejad's study from 2006 in Ardabil ranged in age from 16 to 45. The study by Asterki et al. (2014) found that mothers were most frequently found to be between the ages of 25 and 34. The age range of 20 to 30 years was associated with the highest frequency of mothers (18.8%) in the study conducted by Sumitra Panatiak et al. in India. According to the findings, 49.2% of mothers in 2019 and 50.8 percent in 2014 had filed for a license. But in the research by Yari Nesab and Amini (2017), the proportion of referrals fell in comparison to the year before. The findings of this study indicated that fetal anomalies accounted for 85.7% of the requests for abortion licenses and maternal diseases and disorders accounted for 14.3%. In the study by Yari Nasab and Amini (2017), fetal causes accounted for 92.2% of referrals, while maternal issues accounted for 7.1%. However, in the Kurdistan province, according to research by Seyed al-Shohdai et al. (2010), 37.9% of fetal problems and 62.1% of maternal diseases were the reasons for abortion authorization. According to the findings, Down syndrome accounted for 21.1% of applications for abortion permits citing fetal disorders, followed by severe cardiac abnormalities at 10.9%. The most frequent fetal cause was thalassemia major, according to Tawfighi (1380), Qadi Pasha (2015), and Yari Nasab and Amini (2018) in Boyer Ahmad. However, the primary reasons for abortion were anencephaly in the fetus in the studies conducted by Bazmi et al. (2008) in Tehran, Seyed al-Shohdai et al. (2010) in Kurdistan, and Naeji et al. (2010). In the study by Suleimanpour et al. (2016) in Isfahan, the majority of instances of fetal abnormalities were found in the fetal head in terms of frequency distribution. The preceding findings demonstrate that fetal abnormalities associated with thalassemia in the fetus were the primary causes of abortion in studies conducted more than ten years ago, such as those by Qadi Pasha et al. (2004) and Tawfighi (2004). Anencephaly, however, was shown to be the most prevalent issue in more recent investigations, while problems connected to thalassemia were less common.

The biggest justifications for obtaining an abortion, per the study's findings, were the mother's heart problems. Maternal cardiac disease was identified as the most prevalent maternal cause in the study by Yari Nesab and Amini (2017). The primary causes of abortion were maternal cardiovascular illnesses in the studies conducted by Bazmi et al. (2009) in Tehran, Seyed al-Shohdai et al. (2010) in Kurdistan, and Najji et al. (2010). According to the study's findings, 65.4% had obtained an abortion license. In the study conducted by Yari Nesab and Amini in 2017, 85% of medical abortion licenses were granted. In Qadi Pasha's report from 2004, 51% of medical abortion permits were granted. In the Najji et al. (2010) research, 71.8% of expecting mothers consented to abortion treatment. The inferential findings' results demonstrated that the fetus's age has an impact on the outcome of the license application ( $P\text{-value}>0.05$ ). And among pregnancies between 16 and 19 weeks, the largest percentage of licenses for abortions were approved. In addition, the data showed that the mother's country had an impact on the outcome of the license request ( $P\text{-value}>0.05$ ), with Iranian moms having the highest levels of support. The study's findings revealed that the request's origin, fetal abnormalities, and the mother's illness all had an impact on the licensing request's outcome ( $P\text{-value}<0.05$ ). Also, the majority of abortion permits were granted as a result of maternal heart illness, Down syndrome, and fetal abnormalities. Investigations revealed that there are substantial differences in the reasons for requesting a medical abortion depending on the year of referral, the age of the fetus, and the age of the mother ( $P\text{-value}<0.05$ ).

The age of the mother, the fetus, and the year of referral all had a statistically significant impact on the prevalence of fetal abnormalities ( $P<0.05$ ). However, only the age of the fetus had a significant impact on maternal illnesses ( $P\text{-value}<0.05$ ). The recent development of diagnostic and paraclinical techniques like ultrasound and means of educating the public about the fundamentals of abortion therapy might be cited as possible causes for the trend of rising referrals, along with other factors.

## **Conclusion**

Generally, the study's findings show that while the number of referrals to forensic medicine to obtain an abortion license has decreased compared to the previous year, the proportion of mothers' ages at the time of pregnancy has increased. Additionally, there are more and more cases of fetal causes of abortion requests, with Down syndrome being the most common cause of fetal disorders. There are significant cases of delays in patient diagnosis, which suggests that medical staff do not have accurate and complete information about abortion licensing laws, and all of these cases require more interventions to raise awareness in the community about the issue of abortion and the need for more abortions, according to the results, which show that 12.3% of abortions have not been performed due to high gestational age despite the lifting of legal restrictions and clear medical indications.

It is advised that training sessions be held for medical staff, so they are fully conversant with the legislation governing abortion licenses in light of the aforementioned occurrences. It is advised that a training booklet on the regulations of abortion licenses be developed and distributed within the medical

community to enhance knowledge in light of the statistical findings from the research, which reveal the delay in applying for an abortion license. Ultimately, it is important to take into account the following restrictions when interpreting the findings: as this research was only done in one region, further study is needed to generalize the findings. Another restriction was that details like the second child were not recorded in the files.

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